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IBM Corporation, Dept. 917
3605 Highway 52 North
Rochester, MN 55901-7829

EXAMINER

BATAILLE, PIERRE MICHE

| | |
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| ART UNIT | PAPER NUMBER |
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2186

DATE MAILED: 03/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/675,428

Applicant(s)

LUICK, DAVID A.

Examiner

Pierre-Michel Bataille

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>09/30/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The present Office Action is taken in conjunction to examination of the instant application presenting claims 1-25 for examination.

Claim Objections

2. Claim 1 is objected to because of the following informalities: it is unclear whether the claim requires more than one features being controlled by the block size data or simply "the size of the blocks". Should "are controlled" be changed to "is controlled"? Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-12 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,805,932 (Kawashima et al).

With respect to claim 1, Kawashima discloses A memory architecture for use with a computing device, comprising: a compressed memory for storing compressed data; and a compression engine having a compressor for compressing blocks of uncompressed data from a cache for storage in said compressed memory (*pre-*

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compression data holding means for holding pre-compression data; data compressing means for compressing the pre-compression data held by the pre-compression data holding means; and compressed data holding means for holding compressed data from the data compressing means; Col 5, Lines 20-26) and a compression monitor for monitoring achieved compression ratios ***(the decision means comprising means for determining on an actual compression ratio β being a compression ratio to be expected when the pre-compression data is compressed; Col. 6, Lines 54-57, Lines 65-67)*** and for providing an indication when the achieved compression ratios falls below a predetermined threshold level ***(determining specific values of compression ratio for comparison with PRESET compression ratio; Col. 26, Lines 46-55)*** , wherein the size of the blocks of data that are compressed by said compressor are controlled by block size data ***(data stored in block size, e.g. 512 bytes; Col. 26, Lines 9-29)***; an executable component configured to change the block size data in response to detecting a software trap when achieved compression ration fall below a predetermined threshold ***(call a subroutine, Col. 36, Lines 37-47; Col. 30, Lines 1-65)***.

With respect to claim 2, Kawashima discloses compressed memory being divided into a plurality of pages ***(data compressed in pre-determined data length; Col. 7, Lines 33-37; Col. 12, Lines 53-60; Col. 26, Lines 9-29)***.

With respect to claims 3, 11, and 14, Kawashima discloses said compressed memory including a setup table comprising a plurality of pointers that link to said pages (***allocation table link, Fig. 21-22***).

With respect to claims 4 and 15, Kawashima discloses said block size data being part of a compression control register (***compression register; Col. 29, Lines 35-41***).

With respect to claim 5, Kawashima discloses, for each page of memory, a corresponding value of the compression control register is stored in the page table (***Col. 29, Lines 35-41***).

With respect to claim 6, Kawashima discloses said compression engine further including a decompressor for decompressing compressed data to be stored in the cache (***Col. 36, Lines 48-62***).

With respect to claims 8 and 12, Kawashima discloses the compression ratio monitor provides an indication by generating a trap to software [***Col. 26, Lines 52-55; Col. 8, Lines 35-38***].

With respect to claim 9, Kawashima discloses the memory architecture further comprising a compression control register readable by software, wherein the compression control register comprises at least a block size (***Col. 33, Lines 20-41***).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 11, 13, 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,805,932 (Kawashima et al) in view of US 2002/0083238 (Naka et al).

With respect to claims 11 and 13, Kawashima discloses the invention as claimed, but fail to specifically teach changing the block size data accessed by a compression engine. However, Naka teaches detection of available space in a storage medium in which target data is configured to be stored, an estimator to estimate a compressed quantity of the target data if the target data is compressed at an initial bit rate in order to recompress data to be stored in a storage medium, to increase available space in the storage medium [Fig. 11; par. 0062; 0046]. Therefore it would have been obvious to one of ordinary skill in the art, having both teachings before him at the time of the invention to change the compression rate thereby changing the block size, as taught by Naka, because the result would have automatically increased the total storage area increasing the quantity of storable data, as taught by Naka [Par. 0016].

With respect to claims 16, 17, and 21, Kawashima discloses a processor for processing data; pre-compression data holding means for holding pre-compression data; data compressing means for compressing the pre-compression data held by the pre-compression data holding means; and compressed data holding means for holding compressed data from the data compressing means; and (the decision means comprising means for determining on an actual compression ratio β being a compression ratio to be expected when the pre-compression data is compressed (**Col.**

5, Lines 20-26; Col. 6, Lines 54-57, Lines 65-67). Kawashima fails to specifically teach monitoring the available capacity of the compressed memory and, if the available capacity is below a threshold level, recompress data in the compressed memory previously compressed using a first block size, using a second larger block size. However, Naka teaches detection of available space in a storage medium in which target data is configured to be stored, an estimator to estimate a compressed quantity of the target data if the target data is compressed at an initial bit rate in order to recompress data to be stored in a storage medium, to increase available space in the storage medium [Fig. 11; par. 0062; 0046]. Therefore it would have been obvious to one of ordinary skill in the art, having both teachings before him at the time of the invention to change the compression rate thereby changing the block size, as taught by Naka, because the result would have automatically increased the total storage area increasing the quantity of storable data, as taught by Naka [Par. 0016].

With respect to claims 18-20 and 22-23, Kawashima teaches compressed memory divided into a plurality of pages and includes a page table comprising a plurality of pointers that link to said pages and corresponding block sizes used to compress said pages; the page table further comprising block size

data and a compression ratio corresponding to each page; and periodically interrogate the page table to examine compression ratios for pages stored in the compressed memory **[Fig. 21-22; Col. 26, Lines 52-55; Col. 8, Lines 35-38; Col. 29, Lines 35-41]**.

With respect to claims 24-25, Kawashima fails to specifically teach increasing the data block size only if the available capacity of the memory is below a predetermined level and monitoring the available capacity of the memory and, if the available capacity of the memory is below a threshold value, initiating recompression of data previously compressed with a first data block size, using a second larger block size. However, However, Naka teaches detection of available space in a storage medium in which target data is configured to be stored, an estimator to estimate a compressed quantity of the target data if the target data is compressed at an initial bit rate in order to recompress data to be stored in a storage medium, to increase available space in the storage medium [Fig. 11; par. 0062; 0046]. Therefore it would have been obvious to one of ordinary skill in the art, having both teachings before him at the time of the invention to change the compression rate thereby changing the block size, as taught by Naka, because the result would have automatically increased the total storage area increasing the quantity of storable data, as taught by Naka [Par. 0016].

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre-Michel Bataille whose telephone number is (571) 272-4178. The examiner can normally be reached on Mon-Fri (8:00A to 4:30P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew M. Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Pierre-Michel Bataille
Primary Examiner
Art Unit 2186

March 1, 2006

PIERRE BATAILLE
PRIMARY EXAMINER